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**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/350,713 07/09/99 KEJHA

J JBK-7

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PM82/1130

EXAMINER

VANAMAN, F

ART UNIT

PAPER NUMBER

3611

DATE MAILED: 11/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/350,713

Applicant(s)
Kejha

Examiner
Frank Vanaman

Group Art Unit
3611



☒ Responsive to communication(s) filed on Sep 27, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-27 is/are pending in the application.

Of the above, claim(s) 12-25 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-11, 26, and 27 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Information Disclosure Statement

1. The information disclosure statement filed July 9, 1999 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file; the documents which have been provided have been considered, those documents which have not been provided have not been considered. Note the copy of applicant's PTO-1449 form which indicates which references have and have not been considered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The disclosure is objected to because of the following informalities: in the brief description of the drawings, figure 16A is not discussed. There is no requirement that partial figures be separately referred to, however the description of figure 16 is not descriptive of the material in figure 16A. On page 26, line 11, it appears that "NaBH₄" should be --NaBH₄--. On page 37, line 17, "another embodiments" should be --another embodiment--

Appropriate correction is required.

Claim Objections

4. Claims 1, 2, 3, 7, 8, 9 and 10 are objected to because of the following informalities: Throughout each of the claims, the phrase "which body is riding" should be --which body rides-- (e.g., claim 1, line 7; claim 2, line 7, etc.); in claim 3, line 6, there appears to be text missing between "cell" and "by"; in claim 10, line 6, it appears as though a comma (--,) should be inserted between "body" and "the". Appropriate correction is required.

Claim Rejections - 35 USC § 112

→ (see next page)

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5. Claims 1-6, 11/3, 26/1, 26/2, 26/3, 27/1 and 27/3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 10; claim 2, lines 10 and 12; claim 3, line 11 and claim 11, line 5, "said hydrogen" lacks a clear antecedent basis; in claim 11/3, lines 2-3, it is not clear whether the recited hydrogen generating electrolyzer is a further hydrogen generating electrolyzer beyond that recited in claim 3 (note lines 6-7).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West (US 3,517,766) in view of Munday (US 5,143,025). West teaches a vehicle riding on 1-4 wheels, having a body, an internal combustion engine which is not sealed from the atmosphere, a pair of generators driven by the engine, a battery connected to the generators and motor, the electric motor connected to both the battery and generators, the motor for driving the vehicle, wherein the vehicle is further provided with a steering system. The reference of West fails to teach the engine as being powered by hydrogen, the hydrogen being obtained through the electrolysis of water from a generating cell, and not stored under pressure, the cell electrically connected to the generators and battery.

Munday teaches a very low emission (col. 1, lines 1-31) vehicle engine (10) operated on a hydrogen fuel from hydrogen obtained from a hydrogen storage element (16) which directly feeds hydrogen generated by electrolysis of water in a cell (36, 40, note col. 3, lines 5-20), to the engine and does not store the hydrogen under pressure, the cell being electrically connected (58, 64) to a source of electricity. It would have been obvious to one of ordinary skill in the art at the

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time of the invention to replace the engine and fuel source of the vehicle of West with a hydrogen engine and fuel supply as taught by Munday for the purpose of greatly reducing vehicle emissions, as specifically taught by Munday.

The reference of Munday fails to specifically teach that the electric supply be from both a generator and a battery, however, in view of the vehicle of West featuring both a battery and a pair of generators, it would have been obvious to one of ordinary skill in the art at the time of the invention to allow selective connection of the generating cell of Munday to either electricity source (i.e., the battery and/or generators), for the purpose of allowing the cell to be operative under circumstances wherein one or the other of the sources is not in operation.

8. Claims 4/1 and 4/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Hart (US 4,124,741). The references of West and Munday are discussed above and fail to teach a hydrogen storage portion which contains carbon graphite. Hart teaches that it is well known to use carbon graphite to store hydrogen (e.g., abstract, and col.3, lines 27-34) due to its advantageous properties, as discussed by Hart. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of West as modified by Munday with a carbon graphite material for the purposes of enhancing the storage of Hydrogen and improving the operation of the vehicle.

9. Claims 5/1 and 5/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Meinzer (US 5,360,461). The references of West and Munday are discussed above and fail to teach a hydrogen storage portion which contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride (8) to store hydrogen (col. 4, lines 37-38) as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of West as modified by Munday with a metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle.

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10. Claims 6/1 and 6/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday, Hart and Meinzer. The references of West and Munday and Hart are discussed above (with respect to claims 4/1 and 4/3) and fail to teach a hydrogen storage portion which additionally contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride (8) to store hydrogen (col. 4, lines 37-38) as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of West as modified by Munday and Hart with an additional metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle. As regards the provision of mesocarbon microbeads, while the references of Hart and Meinzer fail to specifically teach the use of such a material, the porous nature of the mesocarbon microbeads is well known, and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to further employ mesocarbon microbeads to enhance storage capacity by presenting a greater surface area.

11. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth (US 5,840,270, filed 06/1995; 04/1993) in view of Hart. Werth teaches an electric vehicle construction including an electric motor (11), battery (24), electricity generating fuel cell (12), which both powers the motor and charges the battery. The reference of Werth fails to teach a hydrogen storage element including carbon graphite. Hart teaches that it is well known to use carbon graphite to store hydrogen due to its advantageous properties, as discussed by Hart. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a hydrogen storage element containing carbon graphite, as taught by Hart, for the purpose of providing a means to store additionally generated hydrogen generated by the generation system of Werth, in order to provide a residual amount of hydrogen to run the fuel cell.

As regards the provision of a body which carries a passenger, at least two running wheels and a steering system, the examiner hereby takes Official Notice that these three features are very

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old and well known in the art of vehicle manufacture, and it is not deemed beyond the skill of the average practitioner in the art to provide a body which accommodates at least one passenger, at least two running wheels and a steering system for the purpose of providing a vehicle which will safely convey passengers from one destination to another.

12. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth (US 5,840,270, filed 06/1995; 04/1993) in view of Hart and Meinzer. Werth teaches an electric vehicle construction including an electric motor (11), battery (24), electricity generating fuel cell (12), which both powers the motor and charges the battery. The reference of Werth fails to teach a hydrogen storage element including carbon graphite. Hart teaches that it is well known to use carbon graphite to store hydrogen due to its advantageous properties, as discussed by Hart. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a hydrogen storage element containing carbon graphite, as taught by Hart, for the purpose of providing a means to store additionally generated hydrogen generated by the generation system of Werth, in order to provide a residual amount of hydrogen to run the fuel cell.

The references of Werth and Hart are discussed above and fail to teach a hydrogen storage portion which additionally contains a metal hydride. Meinzer teaches that it is well known to use a metal hydride to store hydrogen as such a material allows high density storage. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage element of the vehicle of Werth as modified by Hart with an additional metal hydride material as taught by Meinzer for the purposes of increasing the amount of hydrogen which may be stored, improving the operation of the vehicle. As regards the provision of mesocarbon microbeads, while the references of Hart and Meinzer fail to specifically teach the use of such a material, the porous nature of the mesocarbon microbeads is well known, and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to further employ mesocarbon microbeads to enhance storage capacity by presenting a greater surface area.

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As regards the provision of a body which carries a passenger, at least two running wheels and a steering system, the examiner hereby takes Official Notice that these three features are very old and well known in the art of vehicle manufacture, and it is not deemed beyond the skill of the average practitioner in the art to provide a body which accommodates at least one passenger, at least two running wheels and a steering system for the purpose of providing a vehicle which will safely convey passengers from one destination to another.

13. Claims 11/1 and 11/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Tangri (US 4,085,709). The references of West and Munday are discussed above and fail to teach the electrolyzer as being powered by a source of electricity exterior of the vehicle. Tangri teaches a power system for a vehicle which includes an electrolyzer, wherein the electrolyzer may be operated, for example when the vehicle is at rest (col. 3, lines 4-15), by electrical power from an external source (through 24, 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a means for allowing the electrolyzer of West as modified by Munday to be operated from an external power source as taught by Tangri for the purpose of allowing the electrolyzer to operate without draining a vehicle battery.

14. Claims 11/7 and 11/8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth in view of Hart, and Tangri (US 4,085,709). The references of Werth and Hart are discussed above and fail to teach a hydrogen electrolyzer which may be powered from an external power source. Tangri teaches a power system for a vehicle which includes an electrolyzer for producing hydrogen, wherein the electrolyzer may be operated, for example when the vehicle is at rest (col. 3, lines 4-15), by electrical power from an external source (through 24, 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide an electrolyzer as taught by Tangri to the vehicle of Werth as modified by Hart for the purpose of allowing a quantity of hydrogen to be generated without requiring the provision of the material handling (i.e., the iron or iron pellets) taught by Werth as modified by Hart, and further it would

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have been obvious to one of ordinary skill in the art at the time of the invention to provide means for allowing the electrolyzer of Werth as modified by Hart to be operated from an external power source as taught by Tangri for the purpose of allowing the electrolyzer to operate without draining a vehicle battery.

15. Claims 11/9 and 11/10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth in view of Hart, Meinzer and Tangri (US 4,085,709). The references of Werth, Hart and Meinzer are discussed above and fail to teach a hydrogen electrolyzer which may be powered from an external power source. Tangri teaches a power system for a vehicle which includes an electrolyzer for producing hydrogen, wherein the electrolyzer may be operated, for example when the vehicle is at rest (col. 3, lines 4-15), by electrical power from an external source (through 24, 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide an electrolyzer as taught by Tangri to the vehicle of Werth as modified by Hart and Meinzer for the purpose of allowing a quantity of hydrogen to be generated without requiring the provision of the material handling (i.e., the iron or iron pellets) taught by Werth as modified by Hart and Meinzer, and further it would have been obvious to one of ordinary skill in the art at the time of the invention to provide means for allowing the electrolyzer of Werth as modified by Hart and Meinzer to be operated from an external power source as taught by Tangri for the purpose of allowing the electrolyzer to operate without draining a vehicle battery.

16. Claims 26/1, 26/2, and 26/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Laumann et al. (US 4,112,875). The references of West and Munday are discussed above and fail to teach the return of cooled exhaust gasses from the engine back to the intake through a connecting means. Laumann et al. teaches a hydrogen fuel system for an internal combustion engine wherein the exhaust gasses from an output (62) are cooled (64) and returned (69) through a connecting means (50) to the engine intake (44/46), for the purpose of reusing uncombusted hydrogen. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a return to the engine of West as modified by Munday which

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returns cooled exhaust from the engine output to the engine intake as taught by Laumann et al. for the purpose of insuring that all hydrogen is combusted, thus reducing waste.

17. Claims 27/1 and 27/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over West in view of Munday and Kerrebrock et al. (US 5,372,617). The references of West and Munday are discussed above and fail to teach the hydrogen as being generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is old and well known for generating hydrogen (see table 1, col. 2), and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the purpose of easily generating hydrogen at stoichiometry (col. 3, lines 7-9) without using excessive electric power.

18. Claims 27/7 and 27/8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth in view of Hart, and Kerrebrock et al. The references of Werth and Hart are discussed above and fail to teach the hydrogen as being generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is old and well known for generating hydrogen (see table 1, col. 2), and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the purpose of easily generating hydrogen at stoichiometry (col. 3, lines 7-9) without requiring substantial treatment of raw materials.

19. Claims 11/9 and 11/10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werth in view of Hart, Meinzer and Kerrebrock et al.. The references of Werth, Hart and Meinzer are discussed above and fail to teach a hydrogen electrolyzer which may be powered from an external power source. the hydrogen as being generated by a hydrogen generating reactor which produces hydrogen in a reaction with sodium borohydride and water. Kerrebrock et al. teaches that the use of sodium borohydride and water is old and well known for generating hydrogen (see

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table 1, col. 2), and as such, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a reactor which generates hydrogen using sodium borohydride and water, as taught by Kerrebrock et al., for the purpose of easily generating hydrogen at stoichiometry (col. 3, lines 7-9) without requiring substantial treatment of raw materials.

Double Patenting

20. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Applicant's co-pending application 08/950,445 is currently unavailable to the examiner, however Double Patenting issues may exist between the claims of the instant application and those of the co-pending application. As the claims of the co-pending application are not patented at this time, any such rejections would be provisional. As the co-pending application becomes available to the examiner, provisional Double Patenting rejections may be applied against the claims of the instant application.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bernauer (US 4,226,213), Meyer (US 5,293,857), Minami et al. (US 5,462,021), McCallum et al. (US 5,690,889), and Mufford et al. (US 5,991,670) teach vehicle structures and power systems of pertinence.

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22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Vanaman whose telephone number is (703) 308-0424. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1113.

Any response to this action should be mailed to:

Assistant Commissioner for Patents
Washington, DC 20231

or faxed to :

(703) 305-3597 or 305-7687 (for formal communications intended for entry;
informal or draft communications may be faxed to the same number but should be
clearly labeled "UNOFFICIAL" or "DRAFT")

FRANK B. VANAMAN
Primary Examiner
Art Unit 3611

Frank Vanaman
November 29, 2000


11/29/00